

Apr. 3, 1923.

1,450,717

O. E. COTE

WINDING MANDREL

Filed July 31, 1920

Fig. 1

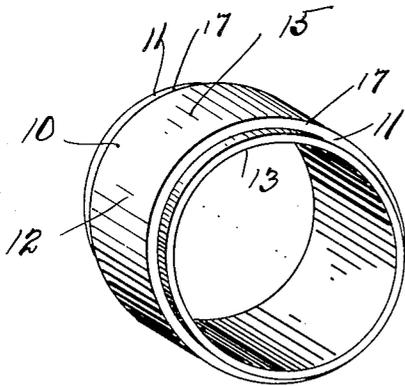
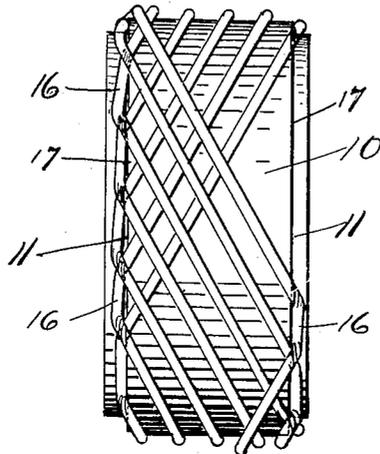


Fig. 2

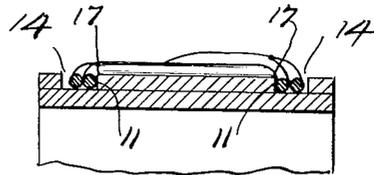
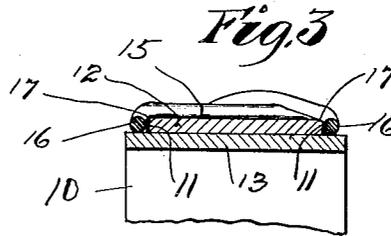


Fig. 4

Inventor

Omer E. Cote

By

Howard E. Ballou

Attorney

UNITED STATES PATENT OFFICE.

OMER E. COTE, OF PAWTUCKET, RHODE ISLAND.

WINDING MANDREL.

Application filed July 31, 1920. Serial No. 400,372.

To all whom it may concern:

Be it known that I, OMER E. COTE, a citizen of the United States, residing at Pawtucket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Winding Mandrels, of which the following is a specification.

This invention relates to the construction of a core, mandrel or arbor on which material such as wire, thread, yarn lacings, tapes or other similar strands or strips of material may be wound with the so-called diagonal or V-shaped wind, and this invention has for its object to provide means in such a core or mandrel for engaging the knuckles or return-bend portions of the material and prevent them from slipping laterally inward on the winding surface from the edge thereof, which slipping effect disarranges the spacing of the wind at the edges of the package which in the case of electrical coils reduces the efficiency thereof rendering the coil defective.

The nature and advantages of the invention will be better understood when the following detail description is taken in connection with the accompanying drawings, the invention residing in the combination and arrangement of parts as claimed.

In the drawings forming part of this specification, like numerals of reference indicate similar parts in the several views and wherein:—

Figure 1 is a face view of my improved winding mandrel, showing strands of wire wound thereon with the knuckle portions or return-bends of the wire as engaging the shoulder portions from sliding inward laterally on the winding surface of the mandrel.

Figure 2 is a perspective view showing one form of my improved mandrel.

Figure 3 is a sectional edge elevation illustrating shoulders formed on the opposite edges of the winding surface of the mandrel for the purpose of receiving and retaining the knuckle portions or bends of the material wound thereon.

Figure 4 is a modified form illustrating a groove formed in the face of the mandrel into which the knuckle portions or bends of the wire are set at the edges of a diagonal wind.

In the construction of electrical inductance coils it is found in practice particu-

larly where the wire is wound by what is known as the diagonal or V-wind upon the ordinary smooth-faced mandrel, that the wire at the knuckles or return-bend will slip or slide laterally inward on the winding surface of the mandrel towards the middle portion thereof, which slipping or sliding effect breaks up the symmetry of the wind and reduces the efficiency and value of the coil.

The following is a detail description of an improved mandrel by which the above difficulties are obviated:—

With reference to the drawings, 10 designates my improved mandrel which may be constructed in any suitable form either tubular or solid and of any suitable length and of any suitable material. In some cases especially when these mandrels are to be used in the forming of electrical inductance coils, I sometimes make them of paper tubes with shoulders 11 formed at either end of the tubing. One simple construction of such a tubing is to form two superimposed tubular layers, the outer layer 12 being of less width than that of the inner layer 13 and the two layers may be cemented or otherwise connected together thus forming shoulders 11 at the ends of the winding surface 15 thereof, but I do not wish to be restricted to this particular construction whereby these shoulder portions are formed as the mandrel may be made of wood, fiber, metal, or other suitable material and the shoulders formed by drawing, swaging, turning, or by any other suitable method.

In some cases instead of forming shoulders at the extreme opposite ends of the mandrel I may form grooves 14 in the face of the mandrel, as illustrated in Figure 4, and in some cases two or more layers of the wire or material wound thereon may lie side by side in these grooves, recesses or depressions which may be caused by the different spacings of the windings.

Upon laying the diagonal or V-wind upon the surface of my improved mandrel, as the same reaches the edge of the winding surface it is naturally drawn down over the shoulder 11 at the edge thereof, the knuckle portions 16 being laid along for a short distance over this edge after which the material is caused to ride back over the edge 17 of the shoulder and then extend in a diagonal direction across the winding surface to the opposite edge of the mandrel where the

knuckles or return-bands are again engaged and retained. This is repeated with the laying of each section of the wind, the knuckles or return-bands at either edge being engaged and firmly held against any possibility of slipping or sliding inwardly upon this surface thereby insuring the winding of mechanically perfect coils which was not possible in a practical way on a mandrel without some means of holding or locking these return-bands against such lateral displacement.

The foregoing description is directed solely towards the construction illustrated, but I desire it to be understood that I reserve the privilege of resorting to all the mechanical changes to which the device is susceptible, the invention being defined and limited only by the terms of the appended claims.

I claim:

1. A wire winding mandrel having sharp-angle continuous unobstructed shoulders over which the knuckle portions of material

are wound diagonally thereon and retained thereby.

2. A wire winding mandrel having recessed portions in its surface at the edge of its winding surface providing sharp-angled unobstructed shoulders for engaging the knuckle portions of the material wound diagonally thereon.

3. A wire winding mandrel having an annular sharp-angled annular continuous unobstructed edge shoulder portion over which the knuckle portions of a wire or strand is laid when wound diagonally thereon to prevent the strand from slipping laterally on said winding surface.

4. A winding mandrel formed of two superimposed layers of tubing the outer layer being of a width less than that of the inner layer providing sharp-angled unobstructed annular shoulders at the opposite edges of its winding surface.

In testimony whereof I affix my signature.
OMER E. COTE.